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The arrangement pointed out in our correspondent's letter is highly ingenious, and would no doubt meet the exigencies of the case; but the additional labour would be considerable, inasmuch as the column $A_1 t_1$ *would have* to be calculated afresh at each valuation, on account of the bonus additions,—a circumstance which appears to have escaped our correspondent's observation.—ED. A.M.]

Epidemiological Society.—We have received from the Honorary Secretaries of the Epidemiological Society the rules and regulations of that Society, with an exposition of its objects; also the printed queries issued by the Small-pox and Vaccination Committees, and those of the common Lodging-house Committee. In our next Number we will lay before our readers the more prominent questions contained in the papers sent to us, which came too late to be further noticed at present. The establishment of a Society amongst the medical profession for inquiries into the numerous topics affecting sanatory and vital statistics, on which the experience and talent in that profession can, if well directed, throw so much light, is a circumstance of considerable interest; and we think that such a Society well deserves the support and active assistance of all who desire to throw aside theories based on mere idle speculations, and to draw their conclusions only from the comparison of, and reasoning upon, well-established facts. In the meantime we refer our readers to Dr. Babington's letter in our last Number for a brief epitome of the plan of the Society, and the intentions of its founders.

REVIEWS OF NEW WORKS.

Industrial Investment and Emigration: being a Treatise on Benefit Building Societies, and on the general principles of Associations for Land Investment and Colonization. With an Appendix on Compound Interest, Tontines, and Life Assurance. By ARTHUR SCRATCHLEY, M.A., Actuary to the Western Life Assurance Society. Second Edition, much enlarged. London: J. W. Parker, West Strand. 1851.

THE labours of Mr. Scratchley in this now widely-extended field are familiar to the public. It is to him, indeed, that the system upon which building societies are founded, mainly owes its purification from the most dangerous fallacies, and a much more perfect organization at the present day. In the first edition of his work, published in 1849, Mr. Scratchley laid down the principles upon which building societies must be based to have any chance of ultimate success, and exposed very completely the all but universal departure from those principles which characterised the existing ones. Since the publication of that treatise a very material improvement has, we believe, taken place,—not only as regards the condition of societies already established, but the mode in which new ones have been constructed; and we have thus the best evidence of the great utility of such works as that now before us. But in the present publication, Mr. Scratchley has greatly extended his original plan: whereas the former was con-

fined to the consideration of Benefit Building Societies, Terminating and Permanent, their constitution and management, and to the investigation of the theories upon which they depend; the present treats, in addition, of Freehold Land Societies, Tontine Associations, Freehold Life Assurance, and Benefit Emigration and Colonization Societies; ample information being given as to the nature and constitution of each of them, and useful suggestions for their improvement and extension. In the Appendix the elementary propositions of the doctrine of Compound Interest are clearly laid down, and several theorems connected with the subject are also deduced, which are not less remarkable for their originality than their great practical utility. Thus it is shown at p. 243, that the number of years in which a sum of money will double itself at compound interest is, in round numbers, equal to the quotient of 70 divided by the rate of interest per cent. very nearly. So that at 5 per cent. a sum will become double in $\frac{70}{5}$, or 14 years; at 4 per cent., in $\frac{70}{4}$, or $17\frac{1}{2}$ years, and so on; and this is a close approximation for all rates not exceeding 10 per cent. Again, it is demonstrated, at p. 257, that $\frac{1}{P_n} - \frac{1}{A_n} = i$, or $\frac{1}{P_n} - i = \frac{1}{A_n}$; and since we have tables at all rates of $\frac{1}{P_n}$, or the annuities which £1 will purchase, we can obtain the annuity which will amount to £1 in n years by merely deducting the interest, and hence by simple inspection determine at once all the relations on which the value of any temporary investment depends. At a subsequent page, Mr. Scratchley shows that if a sum of money be borrowed for such a time, that it would amount at the expiration of it to f -fold its original value; then, the annuity which would pay it off, principal and interest in the same time, is equal to $\frac{f}{f-1}$ times one year's interest on the debt—a theorem of the utmost utility to building societies. Thus, in one of the ordinary kind, the monthly payment for the £60 share is readily found, by its means, to be ten shillings, or twice the interest for one month.

But amongst its more minute features, nothing has struck us as more ingenious in Mr. Scratchley's work than the demonstration at p. 294, *that the value of a share in a tontine is independent altogether of the probability of the life involved surviving to the time of division.* This is a deduction sufficiently evident when pointed out, but one which would present itself at the first glance as extremely unlikely to be true. Our space will not admit of more particular allusion to the many other useful theorems contained in this part of the work; suffice it to say that the book is indispensable to building societies, and one which no association of a financial character should be without. To the student it will present many new problems, and many with which he is familiar, in a novel and instructive point of view; whilst in some of the notes he will find matter to exercise analytical powers of no mean order.
